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VIIRS Imagery in NinJo

VIIRS Processing Chain at DWD

The **Deutscher Wetterdienst (DWD)** uses the meteorological workstation system **NinJo** for its operational forecasting and warning services. The java-based, high-performance client-server architecture allows a highly configurable, layer-based visualisation of almost all available data types like surface measurements, radio soundings, NWP output, radar and satellite products within a multi-window technology. Possible import formats for satellite images are **multi-resolution, tiled, TIFF images with custom tags**, called

NinJo-TIFF hereafter, GeoTIFF images and png/jpeg files with special headers.

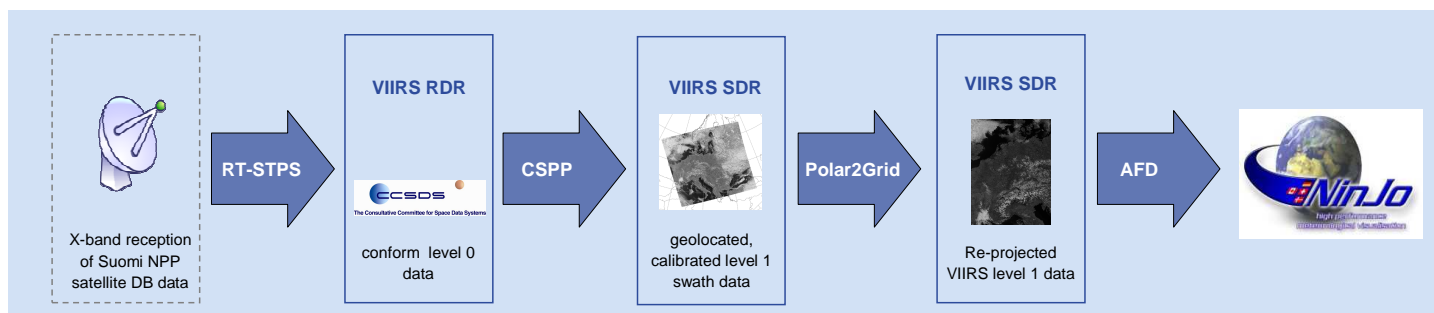
To provide Suomi NPP VIIRS images to the forecasters via NinJo, the following processing chain was built up at DWD:

The received Suomi NPP raw telemetry data is converted to a level 0 format with the NASA **Real-time Software Telemetry Processing System (RT-STPS)** following the Consultative Committee for Space Data Systems (CCSDS) standard, first.

The **Community Satellite Processing Package (CSPP)** transfers these raw data records (RDR) to Sensor Data Records (SDR) based on Raytheon's Algorithm Development Library (ADL). CSPP was developed by the Cooperative Institute for Meteorological Satellite Studies (CIMSS), Space Science and Engineering Center (SSEC) within the NASA/NOAA Joint Polar Satellite System (JPSS) project. Beside CSPP, CIMSS/SSEC also designed the CSPP VIIRS reprojection software **Polar2Grid**.

Polar2Grid reprojects the VIIRS SDRs into either an Advanced Weather Interactive Processing System (AWIPS I and II) compatible netCDF file or a GeoTIFF image. Using the libtiff library together with newly written python bindings, it is also possible to obtain NinJo-TIFFs.

This last option is applied at DWD to reproject the VIIRS images to a region slightly larger than Germany. Finally, the generated NinJo-TIFFs are submitted to the NinJo servers with DWD's automated file distributor (AFD).



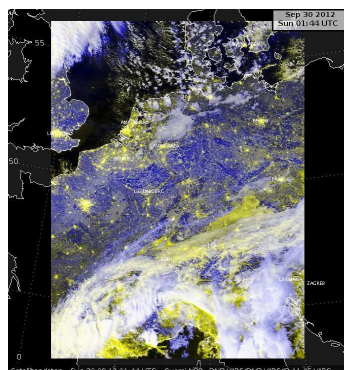
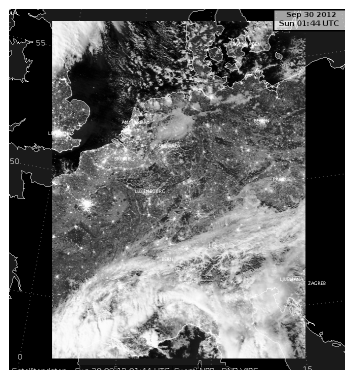
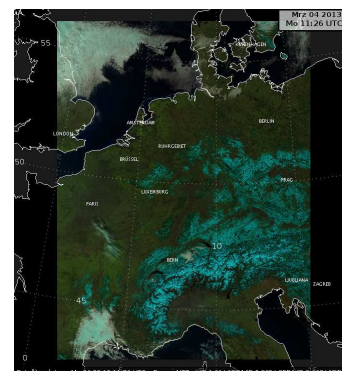
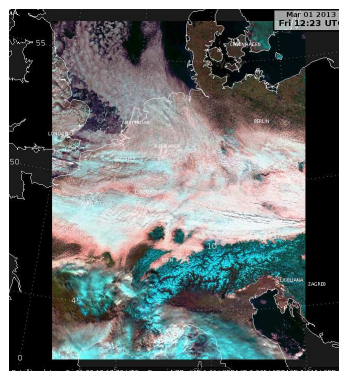
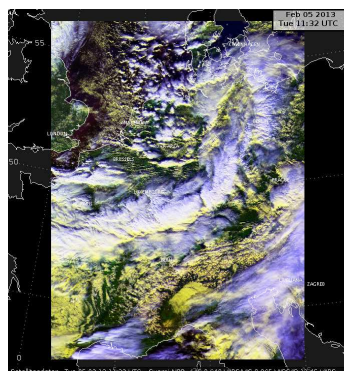
VIIRS Examples in NinJo

The single channel VIIRS images can be combined to RGBs in NinJo itself:

The RGB for **05-Feb-2013** at 11:32 UTC shows a strong cold front across Germany. Inside this strong convection zone, the first thunderstorm of the year occurred.

The RGB for **01-Mar-2013** at 12:22 UTC shows a synoptic situation where Norwegian foehn brings sunshine to Schleswig-Holstein and Mecklenburg-West Pomerania.

The cloud-free condition on **04-Mar-2013** shows the remaining snow cover.



Only some fog is observed at the North Friesland coast.

The **VIIRS Day-Night band (DNB)** is an interesting new channel, because it allows measurements in the visible spectral range during nighttime. Hence, it offers the possibility to detect low stratus/fog during the night (see **30-Sep-2012**).

The last example (**13-Mar-2013**) shows a NinJo-screenshot where a VIIRS-RGB is combined with surface and radar measurements.

